Title: METHOD, APPARATUS AND PROGRAM
STORAGE DEVICE FOR MANAGING
DATAFLOW THROUGH A PROCESSING SYSTEM
Applicants: Kuo, et al.
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100

114

Processor

118

Main
Memory

130

116

System Interconnect

Input
Device

Storage
Devices

Terminal

PCI-X
Device

PCI-X
Device

120

122

124

126

128

Fig. 1

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Applicants: Kuo, et al.
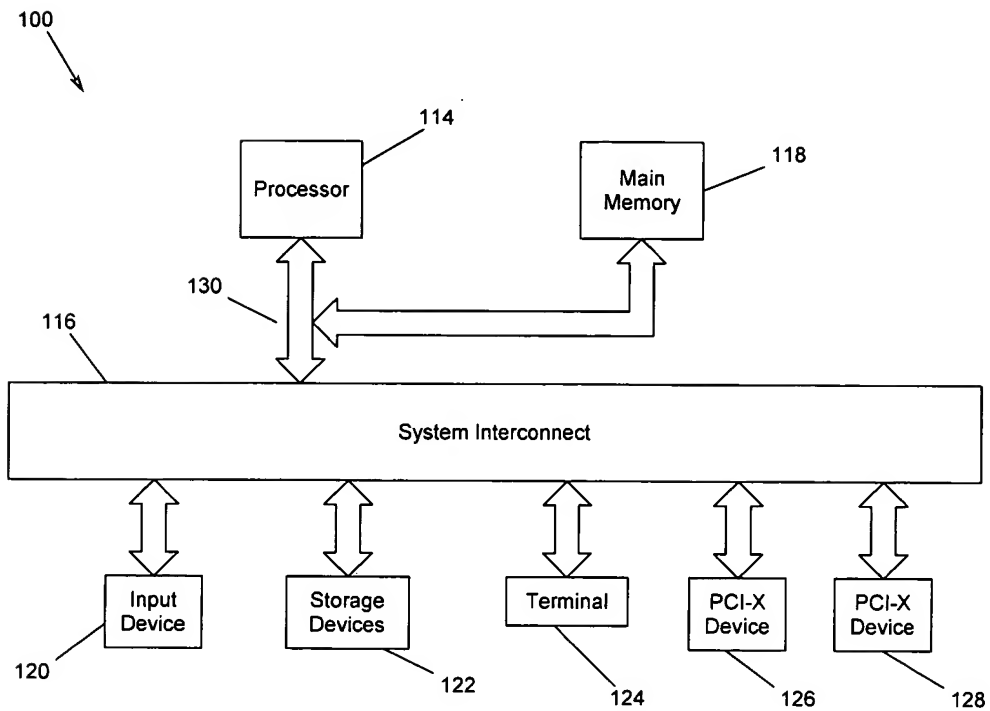Docket: SJO920030027US1/IBMS.070PA
Sheet 2 of 5

205 Host Processor

210 — Host Bus

215 — Host Cache

220 Host Memory

225 Device

230

PCI-X Bus 0

250 Device

260 PCI Device

265 PCI Device

255

PCI-X Bus 1

200

Fig. 2

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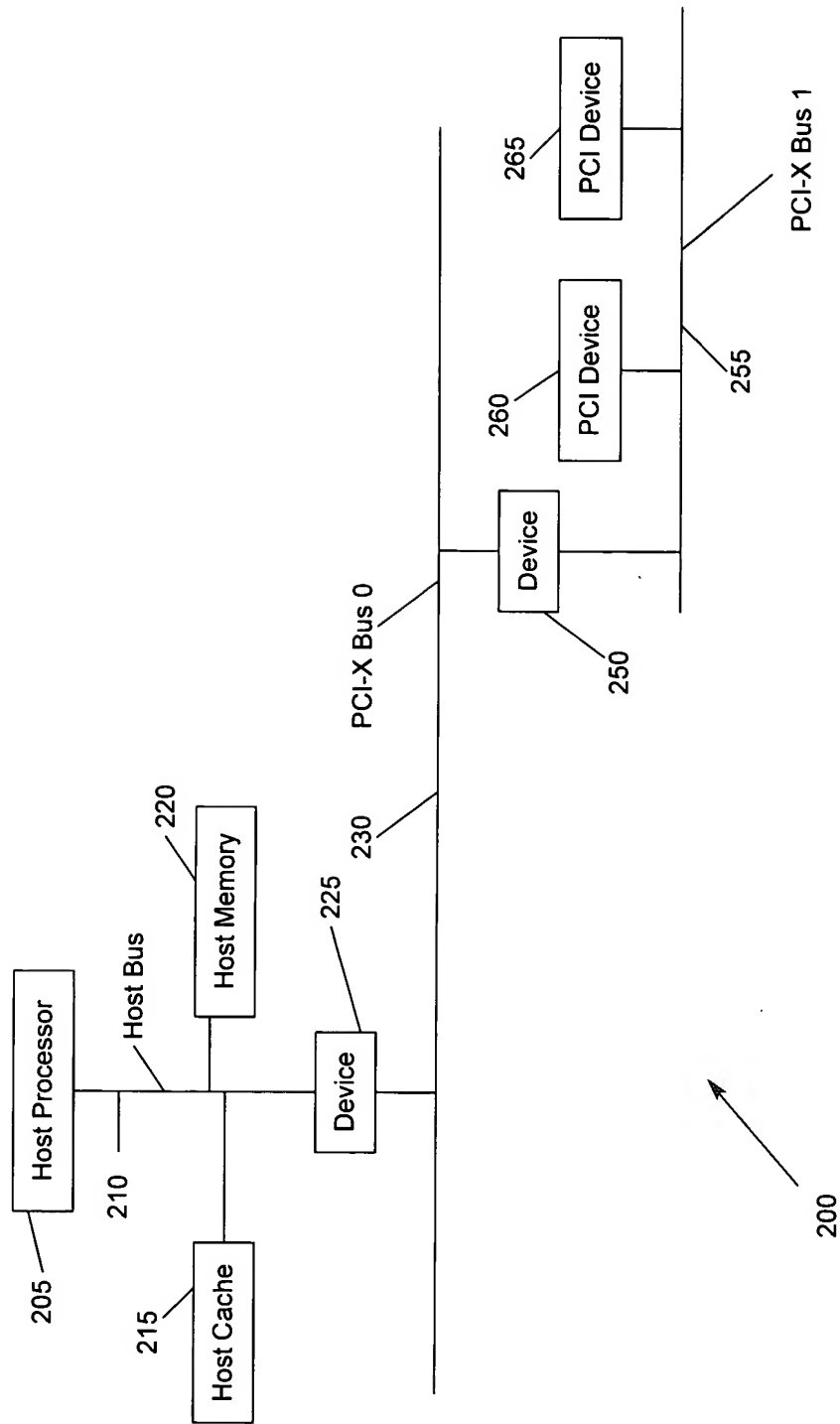Docket: SJO920030027US1/IBMS.070PA
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300

312

310

External
Interface

Buffer

| N |
| N-1 |
| N-2 |
| N-3 |
| • |
| • |
| • |
| 2 |
| 1 |

330

320

CPU
Interface

322

324

Processor

340

Buffer Monitor

346

Prog.
Threshold

314

Arbitration
Signals

Bus Arbitration
And Control Logic

344

Timer

342

352

Buffer Pointer

354

Timeout

350

Almost Full Interrupt

Register

360

Fig. 3

Title: METHOD, APPARATUS AND PROGRAM
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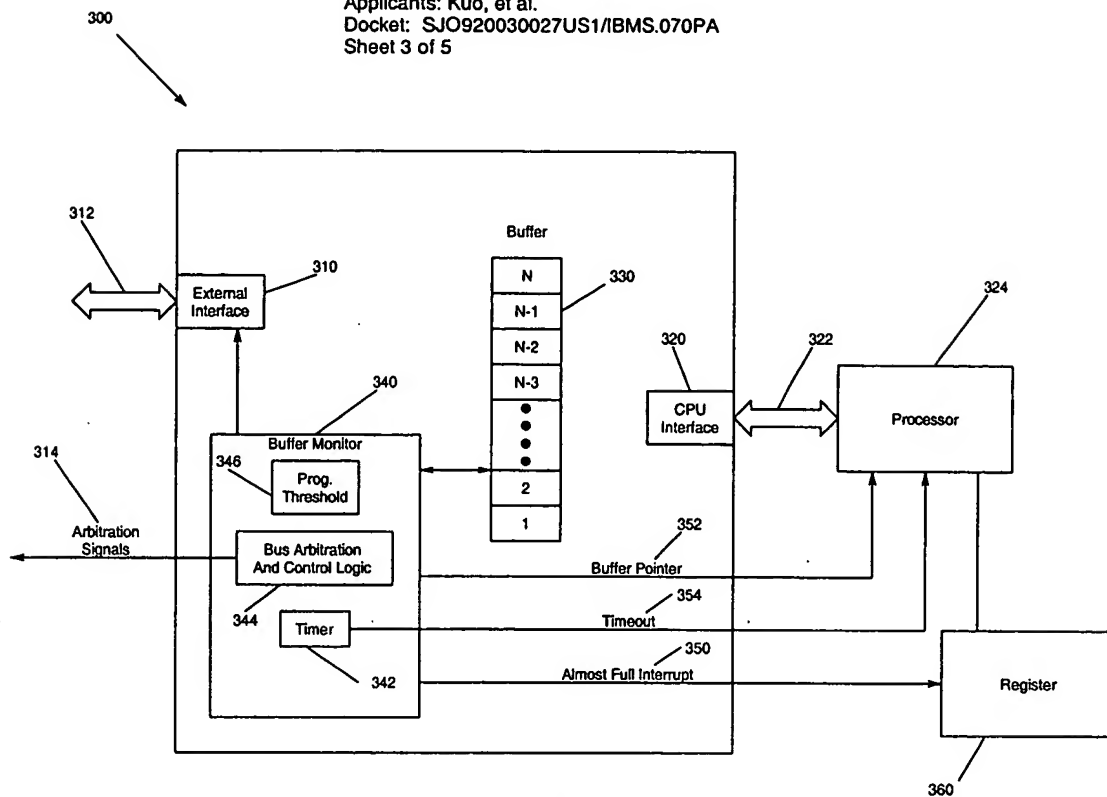Docket: SJO920030027US1/IBMS.070PA
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410

400

An Almost Full Interrupt Occurs

412

The Buffer Monitor Waits For All Stores
To Make It To The Message Buffer

420

424

422 Yes

Did
A Timeout
Occur?

Machine Check Is Asserted
And CPU Bus Transactions
Are Completed To Allow
The CPU To Function.

426 No

430

The Pointer Is Examined
A Predetermined Number
Of Times To Determine
The Pointer Position

440

452 No

442 No

450

Did
The Pointer
Move?

Does An
External Interface
Appears To
Be Hung?

444 Yes

454 Yes

470

460

As Many Messages
As Slots Freed Are Sent

The CPU Performs
Error Recovery

480

462

Has
The Pointer
Moved At Least A
Predetermined
Number Of
Slots?

The Message Buffer
Is Cleared Along
With Pending
External Bus Transaction

482 No

464

484 Yes

The External Interface Is
Then Prepared To Be
Brought Back Online

490

Normal Flow Resumes

Fig. 4

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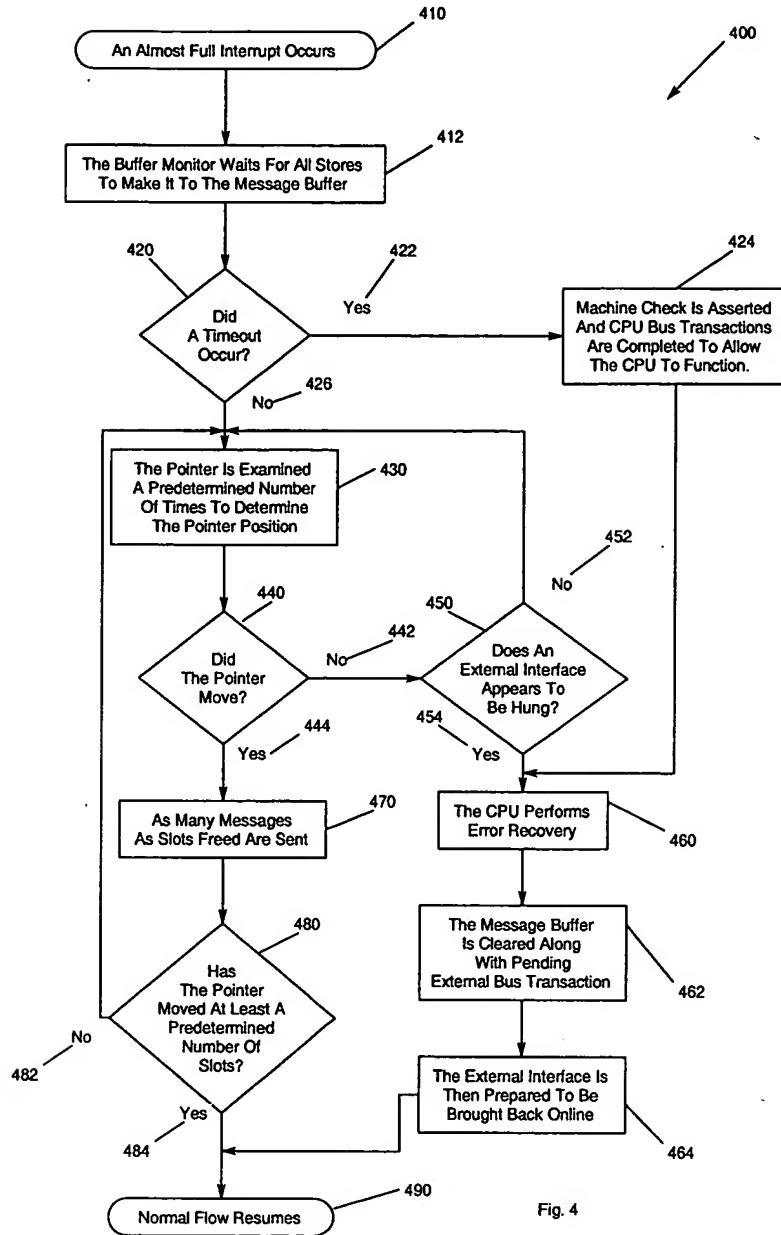Sheet 5 of 5

Fig. 5